



1 Water - Use It Wisely

2 Requirements

Optional

3 Calculator Computer with spreadsheet software
Internet connection

4

5 Background

It is vital that we use water wisely and respect it as a precious resource. Water is an essential part of our lives. It is important to be aware of how we use water and what we can do to assist with water conservation. Our environment is under great stress facing issues such as, decreasing river flows, soil salinity and deforestation.

Calculating the Actual Volume of Water Used

Volume of household water used per capita (kL) 1993-94 - 2011-12.

	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA
1993-94 (a)	np	np	194	131	89	67	93	126
1996-97 (a)	115	96	172	124	92	69	96	124
2000-01 (b)	115	97	162	143	110	125	97	191
2004-05 (b)	95	84	153	124	94	143	81	180
2008-09 (c)	76	78	173	79	80	137	62	150
2009-10 (c)	77	78	161	81	76	143	59	152
2010-11 (c)	68	73	134	69	70	135	56	132
2011-12 (c)	69	70	145	76	72	109	56	127

'Per capita' is another term for 'per person'.

Np - not available for publication

Table 1: Source: (a) Australian Bureau of Statistics, Water Account, Australia 2000-01, Table 9.6 (cat no. 4610.0) (b) Australian Bureau of Statistics, Water Account, Australia 2004-05, Table 7.7 (cat no. 4610.0) (c) Australian Bureau of Statistics, Water Account, Australia 2011-12, Summary Tables, Table 1 (cat no. 4610.0)

1. Draw a side-by-side column graph showing the volume of water consumed by each household, by state or territory by year. Include all years on one graph, using a different colour for each year.

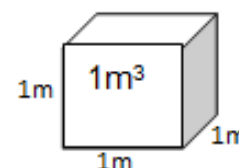
2. Comment on the change in the volume of water use over time.



3. Graph the data in Table 1 using a display different to a side by side column graph. Label the graph and axes appropriately. Comment on the advantages and disadvantages of displaying data two different ways.

4. A kilolitre is the amount of water that would fill in one cubic metre (1m x 1m x 1m).

Using 2011-12 data for your own state or territory in table 1, show the total amount of water used as a cube with dimensions correct to 1 decimal place. For comparison draw a scale drawing of yourself next to the cube.



5. Based on all the information, create a list of suggestions that will help reduce water use.

6

7 **Extension**

7.1

7.2 **Task One**

6. With a partner, list ways that water is wasted around the home. Suggest solutions to decrease this waste.

7.3 **Task Two: Brushing Teeth**

How much water is wasted per person in a year if they leave the tap running while they brush their teeth?

7. Complete steps 1 - 4 (below) as homework.

Step 1: Time how long it takes to brush your teeth in seconds. Call this tb.

tb = _____ seconds

Step 2: Time how long it takes to fill a 1 litre (L) container at your bathroom sink (please use this water wisely). Call this tf. (Hint: make sure you have the tap running at a normal flow)

tf = _____ seconds

Step 3: Calculate the flow rate in L per second.

Flow rate = $1/tf$
= _____ L per second

Step 4: Calculate the water wasted by multiplying the flow rate by the time it takes to brush your teeth.

$$\text{Water wasted} = \text{tb} \times \text{flow rate}$$

$$= \underline{\hspace{2cm}} \text{L}$$

Questions

8. If a person brushes their teeth twice a day and leaves the tap running while doing so, calculate how much water will be wasted over a week, a month and a year? Do the same calculation for a family of four.
9. Using the same volume as in question 4, calculate the possible dimensions of the following prisms that would hold the same amount: a cylinder, a rectangular prism of height 0.5m, an oval based prism with a base area of 2.8m^2 . Draw a diagram for each prism showing the dimensions and also clearly show your calculations.